

**Remarks**

Claims 1, 3, and 10 have been amended. New claims 18-20 have been added. Claims 1-20 are pending. The Amendment After Final submitted October 22, 2002 was not entered.

Examination and reconsideration of the application as amended is requested.

Support for the amendments to claims 1 and 10 is found in the specification as filed, for example, on page 12 lines 5-6, page 12 lines 25-28, page 19 lines 14-15, page 20 lines 2-3, page 20 lines 28-29, and page 22 lines 8-9. Support for the new claims 18-20 is found in the specification as filed, for example, on page 12 lines 5-6, page 12 lines 25-28, page 19 lines 14-15, page 20 lines 2-3, and page 20 lines 27-30.

**§ 102 Rejections**

Claims 1-7 are rejected under 35 U.S.C. 102(b) as purportedly being anticipated by Parker-Hannifin Corporation (PHC).

The Examiner's argument maintains that PHC describes substrates of about 0.0127-0.127 mm (12.7-127  $\mu$ m) and interprets this lower limit to be about 12  $\mu$ m. Applicants respectfully requested that the Examiner cite a reference defining the meaning in PHC, support this interpretation with an Affidavit under 37 CFR 1.104(d)(2), or withdraw the rejection.

The enclosed Amendment should remove this issue. This amendment is supported in the specification as filed, where various species within the range of 1-10  $\mu$ m are described, and further where the instant specification describe the thickness of substrates as "preferably as small as possible" (see specification page 12 lines 25-28).

In addition, the present invention is distinguished over PHC with a self-supporting adhesive resin layer. This feature is described in the specification as filed, for example on page 13 lines 1-7 and page 20 lines 27-28.

The rejection of claims 1-7 under 35 U.S.C. 102(b) as purportedly being anticipated by PHC has been overcome and should be withdrawn.

Claims 1-7 and 11 are rejected under 35 U.S.C. 102(b) as purportedly being anticipated by Bujard.

The Examiner's argument stated that Applicants had not shown support for the self-supporting heat-conducting resin layer that was not described, taught, or suggested by Bujard.

Such support is found, for example, on page 13 lines 1-7 and page 20 lines 27-28.

In addition, claim 3 now depends from claim 1 and further specifies the substrate.

The rejection of claims 1-7 and 11 under 35 U.S.C. 102(b) as purportedly being anticipated by Bujard has been overcome and should be withdrawn.

### **§ 103 Rejections**

Claim 9 is rejected under 35 U.S.C. 103(a) as purportedly being unpatentable over PHC.

Claim 9 depends from claim 1 and adds further limitations thereto. Claim 1, as amended in patentable as described above, thus claim 9 also is patentable.

The rejection of claim 9 under 35 U.S.C. 103(a) as purportedly being unpatentable over PHC has been overcome and should be withdrawn.

Claim 8 is rejected under 35 U.S.C. 103(a) as purportedly being unpatentable over PHC in view of Eddy et al.

Claim 8 depends from claim 1 and adds further limitations thereto. Claim 1, as amended in patentable as described above, thus claim 8 also is patentable.

The rejection of claim 8 under 35 U.S.C. 103(a) as purportedly being unpatentable over PHC in view of Eddy has been overcome and should be withdrawn.

Claims 10, 13, and 15-17 stand rejected under 35 U.S.C. 103(a) as purportedly being unpatentable over PHC in view of Matsushita Denki.

The Examiner repeated each rejection as entered in the prior Office Action, and additionally noted that PHC teaches that the coatings may be cured (p. 15, lines 18-22) and may be faced with a release liner (p. 8, lines 15-18).

Claims 8, 9 depends from claim 1 and adds further limitations thereto. Claim 1, as amended in patentable as described above, thus claim 9 also is patentable. In addition, the only suggestion to combine the particular species of silicon carbide with boron nitride comes from Applicants' specification.

Claim 9 is rejected under 35 U.S.C. 103(a) as purportedly being unpatentable over Bujard.

Claim 9 depends from claim 1 and adds further limitations thereto. Claim 1, as amended in patentable as described above, thus claim 9 also is patentable. In addition, the only suggestion to combine the particular species of silicon carbide with boron nitride comes from Applicants' specification.

The rejection of claim 9 under 35 U.S.C. 103(a) as purportedly being unpatentable over Bujard has been overcome and should be withdrawn.

Claims 10-14 and 16-17 are rejected under 35 U.S.C. 103(a) as purportedly being unpatentable over Bujard in view of DuPont.

The Examiner stated that Bujard teaches that adhesives may be applied in molten form but fails to teach supporting the substrate and removing the substrate from the support after coating. The Examiner stated that DuPont teaches an improved method of coating by supplying a substrate support for the substrate and metering and supplying a coating solution by meyer bar onto the substrate and concluded that it would have been obvious to use the meyer rod method of DuPont in Bujard.

Claim 10, as amended, requires, *inter alia*, bonding the substrate to the support and forming a self-supporting adhesive heat conductive resin layer. The Examiner's combination of references does not describe, teach, or suggest the invention of the amended claims.

The rejection of claims 10-14 and 16-17 under 35 U.S.C. 103(a) as purportedly being unpatentable over Bujard in view of DuPont has been overcome and should be withdrawn.

New claims 18-20 require very thin substrates that the references do not describe, teach, or suggest. Thus, new claims 18-20 also should be patentable.

In view of the above, it is submitted that the application is in condition for allowance. Reconsideration of the application is requested. Entry of the amendment and allowance of the pending claims, as amended, at an early date is solicited. If the Examiner feels that any

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Case No.: 552590/S005

remaining questions or issues may be resolved through a discussion with Applicants attorney, the Examiner is invited to contact me at the telephone number below.

Respectfully submitted,

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Date

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**Version With Markings to Show Changes Made****In the Specification**

On page 14, please amend the following paragraph starting on line 16 and ending on line 23:

When the biaxially oriented polyester film is used as the support to laminate the substrate on the support and when the high density [polyethylenel] polyethylene film is used as the substrate, a re-peelable acrylic adhesive having high bonding power to the polyester film can be used appropriately as the adhesive for bonding the support and the substrate. When it is desired to obtain a heat conductive sheet having high bonding power as the final product, it is preferred to use a release film subjected to the release treatment (preferably, silicone treatment) for the support and an adhesive having particularly high bonding power as the adhesive.

On pages 20-21, please amend the following paragraph starting on page 20 line 21 and ending on page 21 line 11:

Next, a simple-spread adhesive tape to be used as the substrate was produced. A mixture, prepared by adding and sufficiently mixing 3 parts by weight of a cross-linking agent ("M-5A", a product of Soken Kagaku K. K.) to 100 parts by weight of an acrylic adhesive ("SK-1501", a product of Soken Kagaku K. K.), was applied to a 50  $\mu$ m-thick polyester release film ("Purex release film G-50", a product of Teijin Co.) using a gravure roll, and the resulting coating was dried at 65°C for 5 minutes. The thickness of the adhesive layer of the simple-spread adhesive tape after drying was 5  $\mu$ m. A 7  $\mu$ m-thick aluminum foil (a product of Sumikin Alumi Foil K. K.) was laminated on the exposed adhesive surface of the resulting [simple-spread] single-spread adhesive tape. The slurry-like resin composition prepared in the preceding step was applied to the aluminum foil of the resulting laminate film. A 75  $\mu$ m-thick polyester film (a product of Thermo Co.), that had a cover film and underwent peeling treatment to the surface thereof, was laminated on the resin composition layer in such a fashion that the peel-treated surface of the cover film came into contact with the resin composition layer. The resulting laminate was calendar-rolled between two rolls and heated at 120°C for 10 minutes to cure the slurry to the gel. After this curing treatment, the polyester release film used as the support and the polyester film used as the cover film were peeled. There was, thus obtained, a 0.5 mm-thick

heat conductive sheet having the construction in which the aluminum foil having the adhesive layer was laminated on the surface of the heat conductive silicone gel layer in which the silicon nitride particles and the boron nitride particles were uniformly dispersed and which was excellent in flexibility.

#### In the Claims

1. (Second Amendment) A heat conductive sheet including a substrate having a thickness from 1 to 10 [12]  $\mu\text{m}$  and a self-supporting adhesive heat conductive resin layer applied to [at least] one surface of said substrate, characterized in that said heat conductive resin layer contains a binder resin, and a heat conductive filler dispersed in said binder resin.

3. (First Amendment) A heat conductive sheet according to claim [2] 1, wherein said [plastic film is] substrate comprises a polyolefin film or a polyester film.

10. (Second Amendment) A method of producing a heat conductive sheet including a substrate and a heat conductive resin layer applied to [at least] one surface of said substrate, comprising the steps of supporting said substrate by a support by releasably bonding the substrate to the support; applying a film-forming resin composition containing a binder resin and a heat conductive filler to a non-supporting surface of said substrate to form a self-supporting adhesive heat conductive resin layer; and separating the resulting heat conductive sheet from said support; wherein said substrate has a thickness from 1 to 10 [12]  $\mu\text{m}$ .